

Amendments to the Drawings:

Replacement sheets for FIG. 1, FIG. 2 and FIG. 5 are enclosed.

REMARKS

This Amendment is submitted in response to the December 15, 2005 Office Action issued in connection with the above-identified patent application. It is respectfully requested that the Examiner review and consider the foregoing amendments in view of the following remarks.

Turning first to formal matters, the Examiner has objected to FIGs. 1 and 2 because they do not contain the legend "prior art". Submitted herewith are replacement sheets for FIGs. 1 and 2 which now contain the "prior art" legend. The drawings were also objected to because a duplicate reference character "60" has been used to designate two components, namely, the ceiling and the fuse metal. In response, applicant submits herewith a replacement sheet for FIG. 5 wherein the ceiling has now been designated as reference character "61". A specification has also been objected to for this reason. Thus, the specification has been amended to replace reference numeral 60 as used for the ceiling, with reference numeral 61. In view of the foregoing, it is believed that the objections to the drawing and the specification have now been successfully overcome.

Also in the Office Action, the Examiner has rejected claims 1-3 as allegedly anticipated from applicant's admitted prior art shown in FIGs. 1 and 2, but has indicated that claim 4 would be allowable if rewritten in independent form to include the limitations of the base claim and any intervening claims. In response, claim 1 has been amended as indicated above, and claim 2 has been cancelled. No new matter has been added.

The present invention is directed to a fire sprinkler head which includes first and second housings connected to each other, a deflector connected to the first housing, a heat responding unit and a locking unit connected to the second housing. For assembly, the locking unit is inserted into an inner surface of the second housing to reduce an exposure distance of the sprinkler from a ceiling

to which the sprinkler is mounted. The mounting arrangement of the locking unit and the second housing forms an air flow collecting portion between the second housing and a second loading plate of the locking unit. The air flow collecting portion collects air flow that is heated when a fire occurs and allows the heated air flow to move in a swirl direction.

Specifically, and as recited in amended claim 1, the second housing includes a locking groove formed at an inner side of the second housing “in a recess from a lower surface of the second housing”. The locking unit is thus “seated at the locking groove in the recess to reduce an exposure distance from the ceiling surface”. Moreover, the “relative position of the locking unit with respect to the second housing forming a space ... serving as an air flow collecting portion” for collecting and allowing air to flow in a swirl direction within the space. Support for this amendment is found on page 11, line 19 through page 12, line 4 of the present application.

Thus, in the present invention, because the locking unit is inserted into the second housing inwardly, i.e. against the locking groove at the recess, a space is formed between the second housing and the second loading plate of the locking unit. Thus, when an air flow is introduced into the space, the air flows in a swirl direction as shown by an arrow Q of FIG. 5. The air flow collecting space allows a longer presence of air flow to exist therein, which flows in a swirl direction, to increase the reaction time of the sprinkler head.

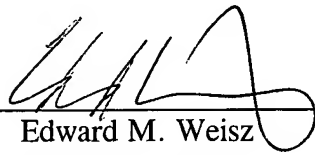
In the prior art sprinkler head of FIG. 2, however, the locking unit is installed at the lower end portion of the second housing. Thus, there is no space to form an air flow collecting portion as in the present invention. The sprinkler head of FIG. 2 is constructed such that an air flow moves rapidly along each gap between heat collecting plates as shown by the direction arrow P in FIG. 2. This rapid air movement yields a reduction in the reaction speed of the sprinkler head.

For all of the foregoing reasons, it is believed that amended independent claim 1 is neither taught nor rendered obvious by the prior art sprinkler heads depicted in FIGs. 1 and 2. Accordingly, it is believed that amended independent claim 1 is now in condition for immediate allowance. Accordingly, claims 3 and 4 depending therefrom are also believed to be allowable.

It is believed that no fees or charges are required at this time in connection with the present application. However, if any fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,

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